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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/622,353	09/12/2000	John A. Arbuckle	0457-PCT-US	4766

7590 08/21/2003

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EXAMINER
TUNG, JOYCE

ART UNIT	PAPER NUMBER
1637	

DATE MAILED: 08/21/2003

23

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/622,353	Applicant(s) Arbuckle et al.
	Examiner Joyce Tung	Art Unit 1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *May 27, 2003* .

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-21* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/27/2003 has been entered.

Claims 1-21 are pending.

2. Applicant's arguments filed 5/27/2003 with respect to the rejections of claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4-7, 9-13, and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al. (5,958,738, issued 9/1999) in view of Kindiger et al. (5,710,367, issued 1/1998).

Lindemann et al. disclose the improved method for obtaining polynucleotides comprising sequences which differ between two populations of DNA (See the Abstract) involving two polynucleotide populations fragmented which are attached an oligonucleotide comprising nested primer binding sites or the complements thereof in which the primer binding sites comprising an outermost primer binding site, an innermost primer binding site and at least one more internal primer binding site between to produce marked sample and control sample (See column 10, lines 26-48). The teachings of Lindemann et al. suggest that the primer is nested (See the recited in step (e) of claim 1 and step (d) of claim 15). Lindemann et al. also disclose that the method is for the identification and isolation of polynucleotides comprising nucleic acid sequences present in a first (sample) cell, cell type, or cell population that are not present in one or more other cells or cell populations. Such polynucleotide is identified as "unique fragments" which may be obtained as a result of differences in sequence content, such as insertion or deletion (See column 5, lines 60-67 to column 6, lines 1-3).

Lindemann et al. do not disclose that an oligonucleotide primer which hybridizes under stringent hybridization conditions to the transposable element in a genetic sequence.

Kindiger et al. disclose that the invention is for using the genetic elements for producing true breeding plant progeny and nucleic acid sequences and is useful for identifying the genetic elements (See column 1, lines 10-15). The invention discloses the use of transposable element systems to isolate the A and N gene (See column 12, lines 41-46). One transposable element termed mutator "Mu" is particularly active and has been used successfully to locate the position

of genes as well as providing a marker for their isolation (See column 12, lines 46-50). The A and N gene can be isolated and cloned via the 220 bp terminal inverted repeat "flag" used to identify a Mu insertion. The Mu probe is used to identify the mutant for the gene (See column 13, lines 9-18).

One of ordinary skill in the art at the time of the instant invention would have been motivated to modify the method of Lindemann et al. by applying the Kindiger et al.'s primer which hybridizes to the transposable element for the identification and isolation of a genetic sequence which is disrupted by a transposable element flanking the genetic sequence associated with a mutant phenotype. Kindiger et al. disclose that the transposable element termed mutator "Mu" is particularly active and has been used successfully to locate the position of genes as well as providing a marker for their isolation (See column 12, lines 46-49). It would have been prima facie obvious to carry out the method of the identification and isolation of a genetic sequence which is disrupted by a transposable element flanking the genetic sequence associated with a mutant phenotype by using the primer which hybridizes to the transposable element sequence in a genetic sequence.

5. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al. (5,958,738, issued 9/1999) in view of Kindiger et al. (5,710,367, issued 1/1998) as applied to claims 1, 4-7, 9-13, and 15-21 above, and further in view of Schunable et al. (5,684,242, issued 11/1997).

The teachings and suggestions of Lindemann et al and Kindiger et al. are set forth in section 4 above.

Lindemann et al. do not disclose using cosegregation analysis to isolate DNA amplification product that cosegregates with the mutant phenotype.

Schunable et al. disclose a method for the production of hybrid seed (See column 5, lines 31-39). The plant used is from maize (See column 8, lines 55-58). Cosegregation analysis was performed to isolate the DNA amplified product that cosegregates with the mutant phenotype (See column 19, lines 33-43).

One of ordinary skill in the art would have been motivated to apply the cosegregation analysis of Schunable et al. to the method of Lindemann et al. to identify and isolate of a genetic sequence which is disrupted by a transposable element flanking the genetic sequence associated with a mutant phenotype. The method of Schunable et al. was involved using cosegregation analysis in which the location of insertion was clearly marked (See column 20, lines 14-16). Thus, it would have been prima facie obvious to carry out the method of the identification and isolation of a genetic sequence which is disrupted by a transposable element flanking the genetic sequence associated with a mutant phenotype with using cosegregation analysis.

6. Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindemann et al. (5,958,738, issued 9/1999) in view of (Kindiger et al. (5,710,367, issued 1/1998) as applied to claims 1, 4-7, 9-13, and 15-21 above, and further in view of Halverson et al. (5,707,809, issued 1/1998).

The teachings and suggestions of Lindemann et al. are set forth in section 4 above.

Lindemann et al do not teach using bulked segregant analysis to isolate the amplified products and the labeled primer.

Halverson et al. disclose a method for sex identification involving bulked segregant analysis (See column 21, lines 23-26) and that the primer used is joined to a label (See column 38, lines 23-25).

One of ordinary skill in the art at the time of the instant invention would have been motivated to apply the bulked segregant analysis of Halverson et al. to the method of Lindemann et al. to identify and isolate of a genetic sequence which is disrupted by a transposable element flanking the genetic sequence associated with a mutant phenotype. Halverson et al. states that the bulked segregant analysis is simple, accurate and efficient (See column 25, lines 17-20). It would have been prima facie obvious to carry out the method of the identification and isolation of a genetic sequence which is disrupted by a transposable element flanking the genetic sequence associated with a mutant phenotype using the bulked segregant analysis of Halverson et al..

Summary

11. No claims are allowable.

12. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (703) 305-7112. The examiner can normally be reached on Monday-Friday from 8:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached at (703) 308-1119 on Monday-Friday from 10:00 AM-6:00 PM.

Any inquiries of a general nature or relating to the status of this application should be directed to the Chemical/Matrix receptionist whose telephone number is (703) 308-0196.

13. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Art Unit 1637 via the PTO Fax Center located in Crystal Mall 1 using (703) 305-3014 or 308-4242. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Joyce Tung

J.T

August 8, 2003

GARY BENZION, PH.D
SUPERVISORY PATENT EXAMINER
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